SECTION 02222 – STANDARDS FOR UTILITY CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: Specifications for the stripping of topsoil and vegetation, excavation, trenching, bedding, filling, backfilling, compaction, pavement restoration, and related work in connection with the installation of water mains, gravity sanitary sewers, storm sewers, force mains, and other City owned utilities are included in this Section.

B. Definitions

1. Excavation: Removal of earth and rock to form a trench for the installation of a water main, gravity sanitary sewer, storm sewer, force mains, and other City owned utilities.

2. Earth: Unconsolidated material in the crust of the Earth derived by weathering and erosion. Earth includes:

a. Materials of both inorganic and organic origin;
b. Boulders less than 1/3 cubic yard in volume, gravel, sand, silt, and clay;
c. Materials which can be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

3. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes:

a. Limestone, sandstone, dolomite, granite, marble, and lava;
b. Boulders 1/3 cubic yard or more in volume;
c. Materials which cannot be excavated by equipment which is used to remove earth overburden without the use of explosives, rock rippers, rock hammers, or jack hammers;
d. Materials which cannot be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, high-lift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

4. Undercutting: Excavation of rock and unsuitable earth below the bottom of the pipe or conduit to be installed in the trench.

5. Subgrade: Undisturbed bottom of a trench.

6. Bedding: Material placed in trench to support pipe and conduit as specified for the utility.

7. Backfill and Fill: Material placed in trench from the top of bedding to finished grade, or to subbase of pavement as specified for the utility.

8. Topsoil: Earth containing sufficient organic materials to support the growth of grass as specified by current USDA standards and specifications.

9. Dry utility: Any utility including electric, gas, telephone, cable, fiber, and other utilities not associated with water, sanitary, or storm sewers.

1.2 SEPARATION REQUIREMENTS

A. All new dry utilities shall maintain a minimum separation of 3.0 feet from all storm structures and pipe.

B. Minimum horizontal separation between storm sewers, water and sanitary sewers shall be 10.0 feet and 8.0 feet to the structures.

C. Utility pedestals shall not be placed on top of storm sewer lines.

1.3 SITE CONDITIONS

A. Existing storm sewers, sanitary sewers, water mains, gas mains, electric ducts, fiber optic ducts, telephone ducts, steam mains, wells, septic systems, wetlands, sink holes, geothermal, regulated drains, and other under-ground structures, lines, and their house connections are to been shown on the plans according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities), is the responsibility of the Contractor. All site conditions shall be field verified by Engineer/Surveyor/Contractor.

1.1 MINIMUM STANDARDS FOR STORM SEWERS

A. Refer to the City of Westfield Stormwater Management Technical Standards Manual, latest version, for additional details and specifications.

PART 2 - PRODUCTS

2.1 BEDDING

A. Class I bedding shall be angular 6 to 12 mm (1/4 to 1/2 inch) graded stone and crushed stone.

B. Class II bedding shall be coarse sands and gravels with maximum particle size of 20 mm (3/4 inch). Class II bedding includes variously graded sands and gravels containing small percentage of fines generally granular and non-cohesive, either wet or dry. Soil types GW (well-graded gravel), SW (well-graded sand), and SP (pea gravel and/or crushed stone mixed with sand) are included in this class.

2.2 BACKFILL

A. General: Backfill for utilities shall be in accordance with Westfield Construction Standard Drawings (WCSD) 02222-001 and 002.

B. Non-Structural Backfill: Excavated material shall be used when earth backfill is specified on the plans or where granular backfill or flowable fill is not specifically specified, provided that such material consists of loam, clay, or other materials which, are suitable for backfilling. Unsuitable backfill or frozen backfill material shall not be used. Suitable backfill shall be the following soils, classified by the Unified Soil Classification System, ASTM D2487.

C. Structural Backfill: Granular backfill, when indicated on the plans or as directed by the Engineer, shall be used for backfilling providing it meets the following soils classified by the Unified Soils Classification System ASTM D2487 or the INDOTSS Section 211 - B Borrow and Structural Backfill. For trenches less than 6" in width (i.e. cutting in water line services), uncompacted No. 8 stone may be used.

D. Unsuitable Materials: Materials which are unsuitable for backfill include stones greater than 8 inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, peat, and soils, classified by the Unified Soil Classification System, ASTM D2487. Frozen materials in excess of 6" in size shall be considered unsuitable and shall be removed during backfill operations.

E. Cellular Concrete (Grout): Light weight cellular concrete may be used for filling of abandoned sewers as a grouting mixture for filling voids and as a substitute for backfill concrete in tunnels or casing pipes. The cellular concrete shall be produced by blending preformed foam with cement-sand grout slurry to produce a concrete having a fresh weight per cubic foot of not less than 75 pounds.

F. Flowable Fill

1. Flowable fill shall be removable and in accordance with INDOTSS Section 213 and as specified herein.

2. Design: Mix design shall be required to be submitted and approved by the WPWD or designated engineer. The Contractor shall be required to provide test data from a laboratory which shows that the proposed mix design is in accordance with the requirements listed in this specification.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES, STRUCTURES, AND PROPERTY

A. All poles, fences, sewer, fiber optic, gas, water or other pipes, wires, conduits and manholes, wells, septic systems, wetlands, regulated drains, sink holes and other under-ground structures, railroad tracks, buildings, structures and property along the routes of water mains, force mains, and sewers shall be supported and protected from damage by the Contractor.

B. Movable items such as mail boxes may be temporarily relocated during construction. Place movable items in their original location immediately after backfilling is completed, unless otherwise shown on the drawings. Movable items which are damaged during construction will be replaced with similar material at the Contractor's expense.

C. The Contractor shall proceed with caution in the excavation and preparation of trenches so that the exact location of underground utilities and structures both known and unknown may be determined. Contractor shall call in utility locations to be marked prior to any construction activities. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged at the direction of the utility company's representative. Contractor shall immediately contact utility company when damage has occurred.

D. **All abandoned water wells must be plugged by a licensed water well driller in accordance with 312.IAC 13.Rule 10. A copy of the state form for abandoned wells must be provided to our office. If well was abandoned prior to 1998 then no form is required. All abandoned water wells to be inspected by the Hamilton County Health Department.**

E. Whenever, in the opinion of the WPWD, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose at the expense of the Developer/Contractor. If a City project, it will be at the cost of the Contractor.

F. Wherever sewer, gas, water, or other pipes or conduits cross the trench, the Contractor shall support said pipes and conduits without damage to them. The manner of supporting such pipes, etc., shall be subject to the approval of the owner of the utility involved.

G. When utility lines that have to be removed or relocated are encountered within the areas of operations, the Contractor shall notify the WPWD or the owner of that utility in ample time for the necessary measure to be taken to prevent interruption of the service.

H. The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless they shall have first obtained the property owner's written consent thereto and shall have provided a copy of said written consent to the City.

I. All excavated material shall be piled in a manner that will avoid obstructing sidewalks and driveways. Line of sight for vehicles and pedestrians shall not be obstructed. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Curb and gutters shall be kept clear and other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.

J. All streets, alleys, pavements, parkways, and private property shall be thoroughly cleaned of all surplus materials, earth, and rubbish placed thereon by the Contractor. Any debris, rubbish, earth, or material shall not be stored within the roadway.

3.2 CLEARING

A. Clear and remove logs, stumps, brush, vegetation, rubbish, and other perishable matter from the project site as required to perform work.

B. Do not remove or damage trees that do not interfere with the work. Completely remove trees required to be removed, including stumps and roots. Properly treat damaged trees which can be saved.

C. Debris from the tree removal, including trunk, branches, leaves, roots and stumps, shall not be buried or burned on the job site, but must be completely hauled away and disposed of at the Contractor's expense.

D. Clear and remove trees, logs, stumps, brush, vegetation, rubbish, and other perishable matter from the existing and proposed right of way.

3.3 STRIPPING AND STOCKPILING OF TOPSOIL

A. Strip topsoil and vegetation from the excavated areas. Clean topsoil may be stockpiled for reuse as the upper 6 inches of the areas to be seeded. Soil stockpiles must be seeded if undisturbed for a period of time greater than 14 days per Stormwater Manual.

3.4 PAVEMENT AND SIDEWALK REMOVAL

A. Remove existing pavement and sidewalks from the excavated areas. Remove excavated asphaltic and concrete materials from the job site as these materials are excavated.

B. The width of pavement removed along the normal trench for the installation of pipe and structures shall not be less than two (2) feet on either side of the trench. Remove all existing pavement when the excavation requires the removal of 75% or more of the total existing pavement width. If over 50% of one travel lane is disturbed, restoration must be extended to the centerline of the roadway.

C. Remove trails completely when excavation is along the length of a trail and requires the removal of part of the trail. Remove sidewalks to existing joints in the sidewalks when excavation crosses sidewalks. If there are no joints in an existing sidewalk or trail, the width of the sidewalk or trail removed shall not exceed the width of the trench by more than 12 inches on each side of the trench.

D. Use methods to remove pavement and sidewalks that will assure the breaking or cutting of pavement and sidewalks along straight lines. The face of the remaining pavement and walk surfaces shall be approximately vertical.

E. All concrete sidewalk and asphalt trails removed must be replaced per WPWD Standards Sections 02500 and 02505 and meet the most current ADA/PROWAG Standards. All restoration work shall require inspection by WPWD.

F. Any area within existing pavement and/or sidewalks and trails to 5’ from outside of pavement edge or back of curb shall have Removable Flowable Backfill as the fill material for the excavated area.

3.5 EXCAVATING

A. General: After stripping of topsoil and vegetation, perform excavations of every description regardless of material encountered within the grading limits of the project to lines and grades as indicated on the drawings or as otherwise specified.

1. Materials removed below the depths indicated shall be replaced to the indicated excavation grade with satisfactory bedding materials placed and compacted. The Contractor will minimize over excavation.

B. Dewatering: Keep excavations free from water until the storm sewers, structures, foundations, and appurtenances to be constructed in the excavations are completed and will safely withstand forces from water. Provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment.

1. Operate dewatering equipment ahead of pipe laying and keep the water level below the pipe invert until the pipe is secured by backfill.

C. Trenching: Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

1. Latest version of OSHA rules and regulations Part 1926 shall be followed and adhered to in addition to conditions below. OSHA standards shall take precedent if a conflict exists.

2. Do not open more than 100 feet of trench in advance of the installed pipe. Excavate the trench within 6 inches of full depth for a distance of at least 30 feet in advance of the pipe laying, unless otherwise directed or permitted.

3. Contractor shall be responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Excavate all slopes to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting, or where shoring

or trench box is to be used. Contractor is responsible for ensuring all excavation is safe and in compliance with OSHA regulations.

4. Sides, slopes, and faces of all excavations shall meet accepted OSHA requirements by scaling, benching, barricading, rock bolting, wire meshing or other equally effective means. Give special attention to slopes which may be adversely affected by weather or moisture content.

5. Flatten the trench sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.

6. Shoring, sheeting, trench box, or other means shall be used to support sides of trenches in hard or compact soil when the trench is more than 5 feet in depth and 8 feet or more in length. Sides of trenches shall include embankments adjacent to trenches. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. Provide a bench of 4 feet minimum at the toe of the sloped portion of the trench wall when the outside diameter of the pipe to be installed is greater than 6 feet.

7. Use diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Do not allow water to accumulate in an excavation. If possible, the grade should be away from the excavation.

8. Excavations shall be inspected by a competent Contractor's representative after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased, if necessary.

9. Do not store excavated or other material nearer than 4 feet from the edge of any excavation. Store and retain materials as to prevent materials from falling or sliding back into the excavation. Install substantial stop log or barricades when mobile equipment is utilized or allowed adjacent to excavations.

10. The width of trenches in earth for storm sewers, basin connections, house connections, and other drains up to and including 33 inches in internal diameter shall provide a clearance of not less than 8 inches or more than 10 inches on each side of the pipe. Trenches for pipe larger than 33 inches in internal diameter shall provide a

clearance of not less than 10 inches or more than 14 inches on each side of the pipe.

11. The maximum clear width of trenches in earth for manholes shall be the greatest external width of the structure plus the space necessary for the construction and removal of the forms and construction of masonry work.

12. The design of the storm sewer pipe and structures is predicated upon the width of trench specified in this Article. The Contractor shall be responsible for the provision and installation, at his own expense, of such remedial measures as may be directed by the WPWD, designee, or utility company representative; should the trench width limits specified in this Article be exceeded.

13. Test the air in excavations in locations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases are present. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, and basket stretcher, shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

14. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.

15. Provide ladders where employees are required to be in trenches 4 feet deep or more. Ladders shall extend from the floor of the trench to at least 3 feet above the top of the excavation. Locate ladders to provide means of exit without more than 25 feet of lateral travel.

16. Provide adequate barriers and physically protect all remotely located excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon completion of exploration and similar operations.

17. All open excavations shall be permanently backfilled within 48-hours of the opening of the excavation. During this time, adequate protection, in accordance with OSHA requirements, shall be required. Snow Fencing, or equivalent; no caution tape will be permitted.

D. Quicksand: Carry on the work with utmost vigor and proceed with the work expeditiously when running sand, quicksand, or other bad or treacherous ground is encountered. Install bedding to support the pipe as directed.

E. Blasting: Removal of rock from the excavation may be facilitated by the use of controlled explosives with WPWD approval.

1. Blasting supervision and Blasting Monitoring and Control Programs shall meet the requirements of this Section.
2. Storage procedures for explosives shall be developed by the Contractor and submitted to the Engineer before explosives are brought to the job site.

3.6 SHEETING

A. The Contractor shall be responsible for construction means, methods, techniques, and procedures, and for providing a safe place for the performance of the work by the Contractor, Subcontractors, suppliers and their employees, and for access use, work, or occupancy by all authorized persons.

B. The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction."

C. Adequate supporting systems, such as sheeting, shoring, piling, cribbing, and bracing shall be furnished and installed by the Contractor as required to protect existing buildings, utilities, and property from damage during the progress of the work.

3.7 STORAGE AND REMOVAL OF EXCAVATED MATERIAL

A. Suitable excavated material required for filling and backfilling operations may be stockpiled in on-site locations, at the discretion of the WPWD or designee, until the material is ready to be placed.

B. Remove unsuitable materials from the job site as unsuitable materials are excavated. Remove surplus suitable materials from the job site as trenches are backfilled.

3.8 TEMPORARY PLUGS

Prevent foreign material from entering pipe while it is being installed. Do not place debris, tools, clothing, or other material in the pipe. Close the open ends of

pipe by securing watertight plugs when pipe laying is not in progress. Remove any earth or other material that enters pipe, lateral pipe, or appurtenances through any open pipe end.

3.9 BACKFILLING WATER MAIN, SANITARY MAIN, FORCE MAIN, AND STORM SEWER TRENCHES

A. Backfilling of water main, sanitary main, and force main trenches shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section. Backfilling of storm sewer trenches shall be in accordance with INDOTSS 715.

B. Do not backfill trenches and excavations until all utilities have been inspected by the WPWD or designee and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings. Required hydrostatic tests may be applied to the line either before and/or after the trench is backfilled, subject to approval of the WPWD or designee.

C. Bedding procedures for sanitary sewers and storm sewers shall be as specified in Manufacturer's recommendation, or WPWD specifications. The more stringent specification will apply. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.

D. Material from the trench subgrade to the centerline of the pipe shall be Class II bedding. Place bedding by hand or approved mechanical methods in layers of 8 inches loose depth. Compact bedding by hand tamping or with a power operated hand vibrating compactor. Deposit bedding in the trench for its full width on each side of the pipe simultaneously.

E. Compaction shall be in accordance with INDOTSS 211.

F. Do not use the following materials for backfill:

1. Unsuitable materials;
2. Frozen materials;
3. Materials which are too wet or too dry to be compacted to the densities specified in this Article;
4. Flowable concrete fill shall not be in direct contact with ductile iron or other metallic pipe materials and/or fittings. Minimum separation of 12 inches shall be maintained.

G. Where the edge of the trench is within 5 feet of the existing pavement or public right-of-way, it shall be backfilled with Structural Backfill in accordance with INDOTSS 211, unless otherwise approved in writing by

the WPWD Engineer. For all new construction, refer to WSD 02222-001 and 002 for backfill limits and requirements. A WPWD Inspector shall be notified 24-hours in advance of the backfilling of all utility crossings of new infrastructure. For all open cuts of existing pavement infrastructure, refer to WSD 02222-002. All restoration of open roadway cuts shall be fully restored within 48-hours of the open cut of the existing infrastructure.

H. All sanitary and water crossings of existing public roadway infrastructure shall NOT be installed with an open cut trench. Trenchless installation shall be required per INDOTSS 716, unless otherwise approved in writing by the WPWD Engineer.

3.10 FLUSHING OF WATER MAINS

A. All flushing of water mains for testing purposes, if chlorinated, shall be required to outlet directly to the nearest sanitary sewer structure. Any water chlorinated for testing purposes shall be dechlorinated prior to draining into storm sewer system.

3.11 LEAKAGE TESTING FOR WATER AND SANITARY

A. All leakage testing for water and sanitary shall be completed and accepted prior to placement of any asphalt, unless otherwise approved in writing by the WPWD Engineer.

3.12 MAINTAINING TRAFFIC

A. Developer is responsible for preparing maintenance of traffic plans for any construction activities that will interfere with public transportation. These maintenance of traffic plans must be included in the construction plans that are submitted to the City. The City will provide maintenance of traffic plans associated with City projects unless otherwise specified in the contract. If there are modifications to the maintenance of traffic plans, it must be reviewed by the City prior to implementation.

B. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain permit(s) from the duly constituted public authority having jurisdiction, which may include the state, county, and city/town. The contractor will be responsible for notifying the local school corporation, all public safety agencies, government agencies, and any affected property owners. The Contractor shall provide the WPWD a detour route plan for review prior to the road closure at least 5 business days in advance of the On or After closure date. The Contractor shall place approved advanced road closure signs and detour route signs a minimum 72 hours in advance of the On or After closure date. The

Contractor shall notify the City a minimum of 48 hours in advance of the actual closing of the roadway.

C. During the construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. Emergency vehicle access must be maintained at all times. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the latest version of the Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the City has the right to reject if determined to be in less than good condition.

D. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such manner as to obstruct traffic. Keep the traveled way of all street, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where approved by the WPWD. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed, except when and where necessary, and then only upon due advance notice to the WPWD and Homeowner or Business owner, and for the shortest practicable period of time, consistent with efficient and expeditious construction. The Contractor shall be liable for any damage to persons or property resulting from his work.

E. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied if, in the opinion of the City, the restoration on streets where excavation has occurred has not progressed satisfactorily.

3.13 SIDEWALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary erosion and sediment control measures as required within the Standards Manual to permit the free passage of surface water along the gutters. The Contractor shall immediately remove all material, exercising such precaution as may be directed by the City. All material

excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

3.14 WARNING LIGHTS

The Contractor shall place sufficient warning lights on or near the work and keep them illuminated during periods of reduced visibility (from twilight in the evening until sunrise) and will be held responsible for any damages that any party or the City may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

3.15 CLEANUP AND MAINTENANCE

A. Cleanup the job site as backfilling is completed. Remove excess earth, rock, bedding, materials, and backfill materials. Remove unused piping materials, structure components, and appurtenances. Restore items moved, damaged, or destroyed during construction. Grade area to be restored. Leave backfill mounded over trenches which are not backfilled with Structural Backfill. Cleanup and restoration specified in this paragraph shall be completed within 1,000 feet of excavation.

B. Restoration of grass, bushes, trees, and other plants shall be completed by Contractor to original or better condition.

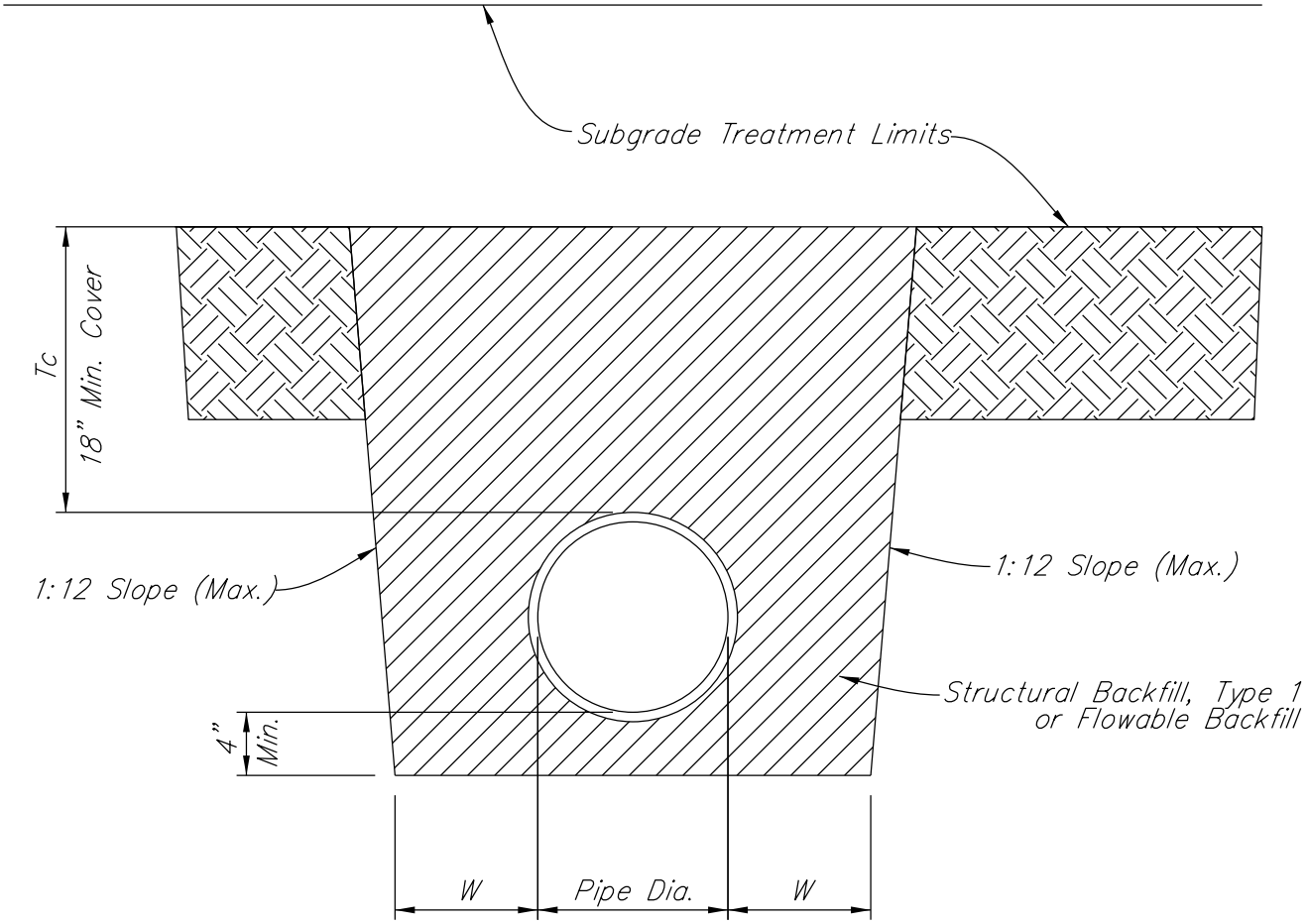
C. Maintain the job site until the work has been completed and accepted. Fill trenches which settle when settlement is visible. Restore items damaged by construction or improper restoration. Keep dust conditions to a minimum by the use of water.

PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

FIGURE	DESCRIPTION
02222-001	Utility Backfill Details
02222-002	Utility Backfill Limits
02222-003	Utility Pothole Details

END OF SECTION 02222



NOTES:
W = 0.3 x Pipe Diamter or 9" Min.
Tc = Structural Backfill Shall Extend to Bottom of Subgrade Treatment Limits, 18" Min.
All Backfill Shall Be In Accordance with INDOTSS 715.
Compaction Shall Be In Accordance with INDOTSS 211.

UTILITY BACKFILL DETAILS

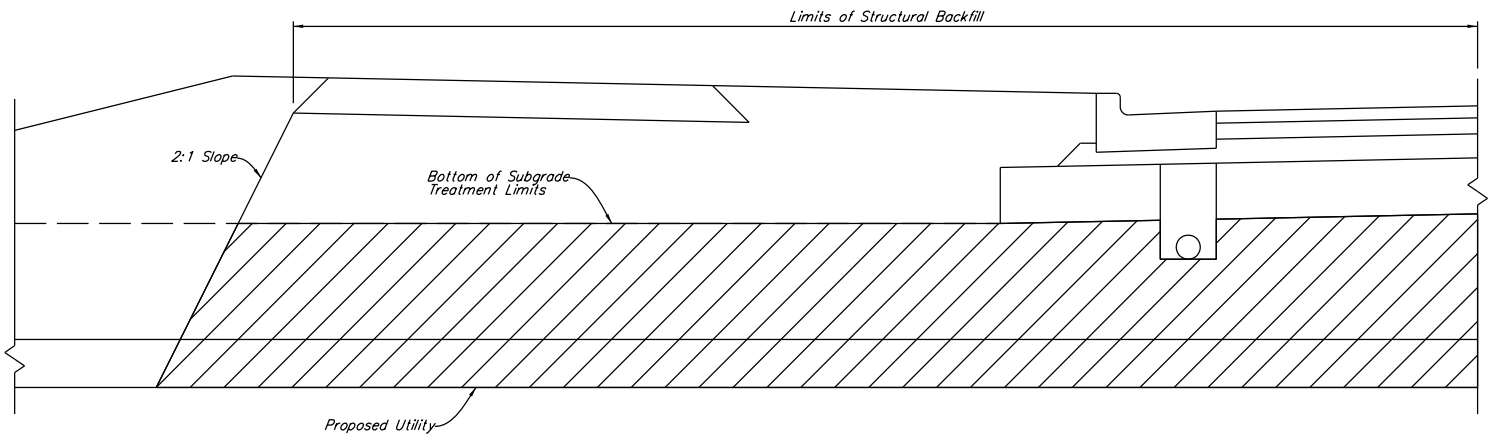
CITY OF WESTFIELD, INDIANA

CITY OF Westfield INDIANA

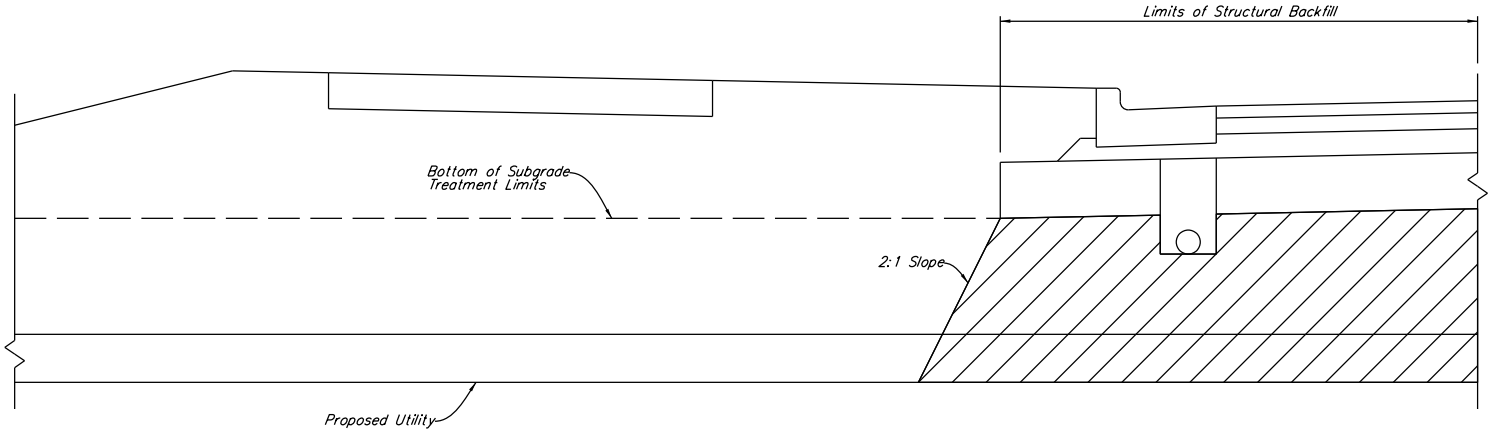
PHILLIP A. SUNDLING
REGISTERED
No. 11300022
STATE OF INDIANA
PROFESSIONAL ENGINEER

2/26/16
DATE

FIGURE 2222-001



Section With Trail



Section With Sidewalk

Structural Backfill Limits

UTILITY BACKFILL LIMITS

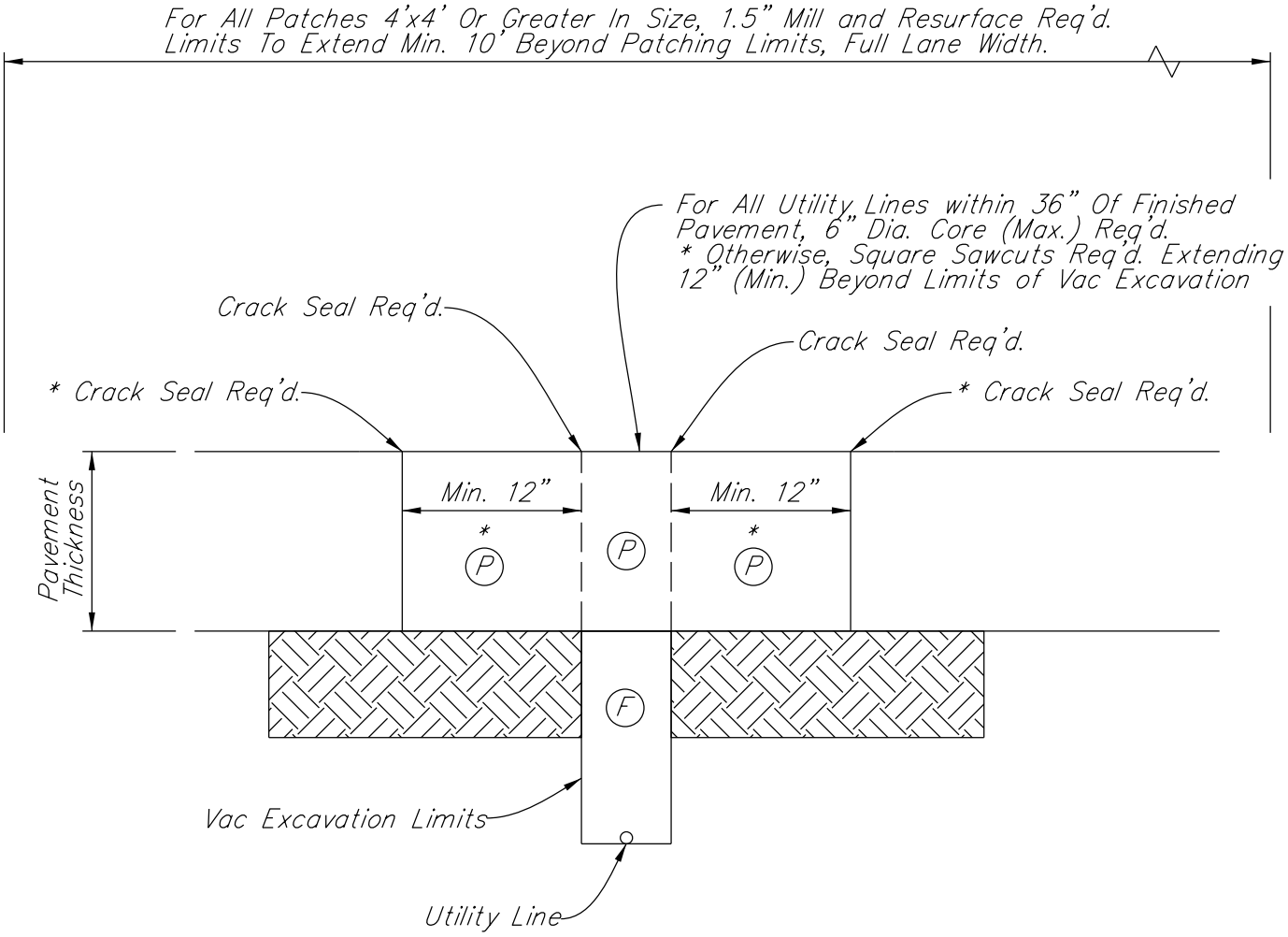
CITY OF Westfield INDIANA

PHILLIP A. SUNDLING
REGISTERED
No.
11300022
STATE OF
INDIANA
PROFESSIONAL ENGINEER

2/29/16
DATE

CITY OF WESTFIELD
INDIANA

FIGURE 2222-002



(F) Non-Removable Flowable Backfill

(P) HMA for Patching (Match Ex. Pavement Thickness, Min. 6")

(R) 1.5" Mill and Resurface
165 #/SYS HMA (Type B for Collectors/Local and Type C for Arterials)

NOTES:
All Non-Removable Flowable Backfill Shall Be In Accordance with INDOT 213.
All HMA for Patching and Resurfacing Shall Be In Accordance with INDOTSS 402.

UTILITY POTHOLE DETAILS

CITY OF WESTFIELD, INDIANA

CITY OF Westfield INDIANA

PHILLIP A. SUNDLING REGISTERED No. 11300022 STATE OF INDIANA PROFESSIONAL ENGINEER

2/29/16
DATE

FIGURE 2222-003